

I

THIRD-GENERATION SYPHILIS*

By DAVID NABARRO, M.D., F.R.C.P.

From the Hospital for Sick Children, Great Ormond Street, London

LADIES AND GENTLEMEN,—I wish, in the first place, to thank you for the great honour you have conferred upon me by electing me President of our Society. I realise to the full how difficult a task I have undertaken in attempting to uphold the traditions of the post, bearing in mind the eminence of previous occupants of the presidential chair, and also the specialised branch of venereal diseases which has largely occupied my attention during the past twenty years—namely, venereal disease in children.

I shall, however, do my best to merit the trust you have reposed in me, and I hope I have not already disappointed you in the subject which I have chosen for my address to you this evening—namely, third-generation syphilis.

It may be thought that this is so rare an event that it will be a waste of time to devote an evening to the subject, for has not a distinguished physician written recently in his book "Lectures on the Diseases of Children" that third-generation syphilis is "so rare that it need not be reckoned with in practice"? Though he is a great physician and a personal friend for whose opinion I have the highest respect, I venture to disagree with him on this point, and I think you will agree when I tell you that I am presenting to your notice this evening the histories of sixteen families with *undoubted* syphilis in three generations, two in which both parents suffered from congenital syphilis, of six more in which syphilis was *probably* present, and a further seven families in which it was *possibly* present. The distinguishing features of these three classes of case I hope to make clear during the course of my subsequent remarks.

At the outset I may say that when I undertook the charge of the Venereal Diseases Clinic at the Hospital for Sick Children at Great Ormond Street seventeen years ago I knew practically nothing about third-generation syphilis. Its existence has gradually become

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apparent to me, and since I have been on the lookout for it I have become convinced that it is not nearly so rare an occurrence as is generally supposed. Moreover, in delving into the literature upon the subject, I am amazed at the number of papers which have been written upon it—mainly abroad, it is true—and most of these papers have recorded one or two examples of the condition, and perhaps referred to a few others from the literature. The French syphilologists are the proponents of “*hérédo-syphilis of the second generation*” (as they prefer to style it), and the Fourniers, father and son, have probably done more than any one else to draw the attention of the profession to the alleged frequency of the condition in their various papers and the two volumes,^{1 2} which they have written upon the subject. In this country, on the other hand, we have gone to the other extreme, and practically ignored, while some have even denied, the probability or even the possibility of syphilis being transmitted to the third generation. Why is this? There are probably two reasons. First, that the French proponents have exaggerated the influence of syphilis in the parents and grandparents by making it the cause of any departure whatsoever from the normal—such as hare-lip, foetal monstrosities, hypospadias, congenital dislocation of the hip, hernia, appendicitis, and even the green diarrhoea of infants—the so-called dystrophic effects of inherited syphilis as opposed to the “infective” or “virulent,” as Ed. Fournier calls them in his monograph referred to above. This desire of the French to drag into the net of syphilis many conditions which certainly have no causal connection with it, antagonised British medicine to such an extent that it totally discredited the evidence adduced in support of the alleged transmission.

The second explanation of the British attitude towards third-generation syphilis is doubtless the emphatic opinion expressed upon it by Sir Jonathan Hutchinson³; and bearing in mind his eminence in the profession, and particularly in the domain of syphilology, it is not to be wondered at that the large majority of British practitioners have been content to share his opinion. It would appear that for a time Hutchinson believed in the possibility of third-generation transmission, and recorded cases which appeared to support the view, but “more

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extended experience," he says in the last edition (1909) of his work on "Syphilis" "has led to incredulity." It may be of interest to quote to you his exact words :

"As to inheritance in the third generation, I am absolutely incredulous. That such an occurrence should be possible seems improbable in the highest degree, and the facts which have been adduced in its support are far from being unimpeachable."

In a paragraph at the end of the same chapter Hutchinson shows signs of retreating from the unassailable position he has adopted, for he writes thus :

"In reference to third generation transmission, I have by no means intended, in what I have said above, to imply incredulity as to its possibility. Recent investigations have made it probable that the spirillum may exist in a quiescent but living form long after all evidences of its activity have ceased in the patient. There are also certain facts which would favour the suggestion that the ovary is perhaps an exceptionally favourable site for such exceptional persistence, and it is established that in infancy the spirillum is very abundant. These conditions make for possibility, and I do not desire to ignore them."

How are we to explain Hutchinson's change of view in one and the same chapter? It looks as though he had read about some recent experiments or observations upon the subject, after the main body of the chapter was printed. Certainly since the publication of the earlier edition of his book, two very important discoveries—namely, that of the *Treponema pallidum* in the causation of syphilis, and of the Wassermann reaction in its diagnosis—had been made, and it is by their help that much of our knowledge of syphilis has been lifted from the realm of theoretical speculation, often based on imagination and biassed clinical observation, to a more certain plane of clinical observation reinforced by laboratory findings.

What have other English authors written upon third-generation syphilis? Jonathan Hutchinson, Jr., with the filial respect which was more prevalent forty years ago than perhaps it is to-day, wrote in 1895, in Treves' "System of Surgery": "There is not the slightest evidence of syphilis being ever transmitted to the third generation." Dr. George Ogilvie,⁴ in a long paper upon the subject in the *British Journal of Dermatology*, gives a critical survey of reported cases, drawing attention to the weak points of several of them. In his opinion it is not essential that one should demonstrate syphilis in

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one or other grandparent, as A. Fournier demands, because it is undoubtedly possible to diagnose congenital syphilis in a patient by signs and symptoms—and, I venture to think, most, if not all, of you will agree with Dr. Ogilvie that evidence of syphilis in the grandparent is of corroborative rather than of intrinsic value. A greater difficulty arises when we endeavour to fulfil another of A. Fournier's postulates, namely, that acquired syphilis in the second generation can be excluded. Ogilvie writes: "it must be granted once for all, that to absolutely exclude acquired syphilis is impossible. Common-sense, and a sound valuation of the probable must step in, where absolute proof is impossible." These words were written in the pre-Wassermann days, and while a positive reaction in the father might be taken as evidence of acquired syphilis, a negative reaction would have little value, because it is a curious fact which I have observed on many occasions, and which has also been commented upon by Jeans and others, that the fathers of syphilitic children may often have a negative W.R. Ogilvie thus sums up his review: "We are told that 'there is not the slightest evidence of third-generation transmission,' and on the other hand that 'there are undoubtedly cases' in which syphilis was thus transmitted. Both statements are equally unwarranted. The evidence before us furnishes us, if not with absolute proof, still with reasonable probability, that syphilis may descend to the third generation."

The matter receives very scant notice from recent British authors. For example, Dr. Still, in the 1927 edition of his book on "Common Disorders of Childhood," does not refer to the possibility of its occurrence, nor does Leonard Findlay in his "Syphilis in Childhood," published in 1919. I may add, that in the article on "Congenital Syphilis," which I contributed to Garrod, Batten, Thursfield and Paterson's "Diseases of Children," 1929, syphilis of the third generation was not alluded to, although in the paper⁵ which I had the honour to read before this Society in 1927, on "Some problems associated with the transmission of syphilis to the second and third generation," I referred to eight families with syphilis in three generations, and to three others in which the mothers were congenitally syphilitic and the children probably or possibly so. The matter is so controversial that, on

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the whole, I considered it advisable not to refer to it in such a short article as that to which I refer, but as I have added a considerable number of cases to my series during the past few years, it appeared to me that I might make this evening a fitting opportunity to revive the consideration and discussion of the problem.

To the views of the French writers I have already briefly alluded. A. Fournier wrote in 1891: "there is no valid reason why hereditary syphilis may not be transmitted by a woman of eighteen or twenty; acquired syphilis may be transmitted for as long." He concludes by saying that "transmission to the third generation is a possibility logically acceptable in principle, but one which has not yet been indisputably demonstrated." He certainly made the conditions of proof very stringent, inasmuch as he demanded proof of syphilis in the grandparent, evidence of early inherited syphilis in the parent and child (*i.e.* the second and third generation individuals), and also that syphilis had not been acquired by either of the parents (*i.e.* the second generation). As Ogilvie and others have pointed out, direct evidence of syphilis in a grandparent is unnecessary, if the parent has obvious stigmata of the inherited disease.

Dr. Barthélémy,⁶ at the International Congress held at Moscow in 1897, talks of para-hérédo-syphilis of the second generation, meaning thereby the various dystrophic manifestations alluded to above. He maintains that the characteristics are hereditarily transmissible afterwards; are not amenable to anti-syphilitic treatment and do not protect against an acquired infection. He does not believe that virulent héredo-syphilis can be transmitted to the third generation.

At the International Congress of 1900, Professor Tarnowsky,⁷ of St. Petersburg, gave it as his opinion that syphilis was not transmitted, as such, to the third generation, and the dystrophies which are alleged to be para-syphilis, he thinks may be due to quite other causes. He expresses a belief in Profeta's law, that the child of a syphilitic mother may inherit a certain degree of immunity, which, however, is generally lost either during childhood or by the age of puberty. The individual then becomes again susceptible to syphilis, and if it be acquired, Tarnowsky calls this "syphilis binaria." He maintains that this form of syphilis may be atypical and that it

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produces in the third generation much more baneful effects than does the first generation syphilis upon the second.

At the same Congress, Finger ⁷ gave his views upon the subject, and stated that, theoretically, it must be admitted that transmission of syphilis to the third generation is possible, but that up to the present time it has not been indubitably demonstrated. His postulates for the demonstration of the condition are as stringent as those of Fournier, but he goes even further, and requires the appearance of congenital syphilis in the second and third generation to be shortly after birth.

I have already referred to the volume by Ed. Fournier ² upon hérédosyphilis of the second generation, in which he gives 116 illustrative cases collected from various sources, but, as the author himself admits, many of these cases do not fulfil the necessary conditions. In my view, one of the weakest links in the chain of his evidence is the fact that the alleged syphilis of the third generation consists in the dystrophies to which reference has already been made, and in some of the cases the third generation is non-existent because all the children are either born dead or die in early infancy without showing symptoms suggestive of congenital syphilis. One cannot deny the syphilitic nature of some of these cases, but in the absence of blood tests on the children and of pathological examinations, either of the placenta or of the children which died, we must regard the evidence of syphilis as not proven.

In that excellent German monograph ⁸ on congenital syphilis edited by Jadassohn (1927), H. Rietschel, in discussing third-generation transmission, refers to a number of positive cases, but he states that hardly any of them satisfy the conditions laid down by Fournier and Finger. If all the recorded cases, says Rietschel, are critically examined, one cannot doubt that syphilis can be transmitted to the third generation, and possibly even to further generations. "Its occurrence we may believe is not so infrequent, but it cannot always be proved in actual practice."

Among American authors who refer to the subject, J. H. Stokes ⁹ says: "It is generally conceded that a tendency to constitutional inferiority appears in the children of parents who have severe forms of hereditary syphilis. Those who have hereditary syphilis in mild

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form may, if efficiently treated, give birth to healthy children." H. C. and M. H. Solomon, in their book "Syphilis of the Innocent" (1922), say that, while there is some divergence of opinion, the general tendency is to believe that syphilis is not transmissible beyond the second generation, which means, of course, that a congenital syphilitic is probably never contagious by the time the age of marriage has been reached. On the other hand, Jeans and Cook, in their book on "Pre-pubescent Syphilis" (1930), say that "at present we can only speculate about the possibility of congenital syphilis in the father being transmitted to the third generation." The probability of a woman with congenital syphilis transmitting the infection to her offspring depends almost entirely upon the possible duration of the disease in such a woman. We know a woman with acquired syphilis can give birth to syphilitic children for twenty or more years, and therefore there is no reason why the treponema could not remain transmissible for as long a time in the infected offspring. These authors add: "The chain of circumstantial evidence accompanying many of the reputed examples is such as to provide a high degree of probability for this type of transmission."

In the paper which I read before this society in 1927, I brought to your notice the histories of eight families with syphilis in three generations, and three others in which the sequence was *probable* or *possible*. In the first category I include cases in which grandparent, parent (usually the mother only) and child, all have a positive W.R.; also cases in which the parent (mother) has obvious stigmata of congenital syphilis, such as typical Hutchinsonian teeth, rhagades, and signs or a history of interstitial keratitis, etc., from which I conclude that one or both grandparents were syphilitic. On further enquiry in such a case one will sometimes be able to elicit the fact that the grandfather died in a mental home of paralysis, and on writing to the home in question, confirmation has nearly always been obtained that the man died of general paralysis—which of course means syphilis.

In the second category of *probable* syphilis in three generations, I include cases in which the mother is obviously a congenital syphilitic and the child may have had congenital syphilis in infancy, but owing to an

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imperfect history and absence of a blood test at the time, and a negative W.R. when the child was seen by me, one cannot be sure of the diagnosis; if the child's early symptoms suggest that it might have suffered from the disease I include that case among the "probables"; whereas, if the early symptoms are more vague I include the case among the "possibles."

Few, if any, will deny that syphilis may be present in three generations of a family, but it is often impossible to exclude the possibility of a latent acquired syphilis in the father. The father will often admit the possibility of infection, but gives no history of one, and his Wassermann and Kahn reactions are frequently negative. If we assume that it is the father who gives the child its congenital syphilis, then we have an instance of paternal transmission, and the child's syphilis is of the second generation, and not of the third generation from the congenital mother. If, on the other hand, the child derives its syphilis direct from its congenitally syphilitic mother, then the syphilis has been transmitted to the third generation. If, however, the father (who, be it remembered, often gives no history of infection and has negative blood reactions) is supposed to infect the mother, who then transmits the disease to the child, we must assume that the mother, who is already suffering from congenital syphilis, is capable of reinfection or superinfection—which, so far as I am aware, is not proven.

Since 1927 my list of families has been increased from eight to sixteen with syphilis in three generations; from one to six in which syphilis was "probable" in the third generation; from 2 to 7 in which it was "possibly" present, and by the recognition of two families in which both parents are congenital syphilitics. It is apparent, therefore, that considerable additions have been made during the last five years, since I have been on the lookout for such cases. The question may legitimately be asked why, if the condition is not so rare, others have not come across similar cases. There are probably several answers to this question. First and foremost, in my opinion, comes the fact that life to-day is so strenuous and "hectic" a business that we do not give ourselves time to do things thoroughly. Unless a mother were almost blind from corneal nebulæ, or had a saddle-shaped nose, or rhagades that could be detected from the other end

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of the consulting room, how many hospital physicians or surgeons would find the time to investigate the mother, and possibly her family history, when it was her child about whom she had come to seek advice? I have on occasion seen mothers whose obvious congenital syphilitic stigmata had been missed; doubtless because the physician or surgeon had a definite—and usually too large a—number of patients to examine. On the other hand, I have now learned to detect finer points in diagnosis such as slight degrees of dental malformation in the incisors and six-year-old molars, broadening of the forehead, with some widening of the bridge of the nose in the parent, which has prompted further enquiry into the personal and family history. This may elicit information about earlier eye trouble in the mother, or in one or more of her brothers or sisters, or about her mother's obstetric history, or possibly her father's death from paralysis.

The second answer therefore to the question I propound is a lack of knowledge of the less obvious signs of congenital syphilis in the mother, the detection of which would suggest enquiries into *her* parental history. Thirdly, the lack of appreciation which, unfortunately, is all too common among clinicians, that one negative blood test on mother or child does not necessarily preclude syphilis. Fourthly, practically the whole of my experience has been gained from patients of the hospital class, amongst whom acquired syphilis in the father formerly received very inadequate treatment, so that the chances of congenital children being born were great. Practitioners who treat syphilis in private practice probably get their patients to attend more regularly and often, which means that these are less likely to transmit the disease to their offspring.

At this stage a series of lantern slides was shown, giving the family histories of a considerable number of cases, which are recorded in the addendum to this paper.

The chief points to which I wish to draw your attention are the following :—

(1) Of the seventeen families with syphilis in three generations, *in all but one* it was the mother who was the congenital syphilitic, and to my knowledge none of these mothers had received adequate treatment of her syphilis, and nearly all of them had had no treatment at all,

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because the condition had not been recognised. In the seventeenth family it was the father who was congenitally syphilitic, while the mother had never shown any sign or symptom of syphilis (W.R. always negative). In the one case in which both parents had congenital syphilis, the father had been treated by me, and for years had a negative Wassermann, whereas the mother had never received any treatment. Of the seventeen fathers in these cases, ten gave no history of infection, five were not seen by me, and the remaining two were themselves congenital syphilitics—one treated, the other untreated.

(2) When the mother's condition has been recognised, usually by an interstitial keratitis, and treated before marriage, her children have been perhaps only slightly affected shortly after birth, and when seen by me have appeared healthy and given negative blood tests. In this category of "possible syphilis in three generations," there are seven cases, in all of which the mother is the congenitally syphilitic parent. Three of the fathers I have not seen: the four I have seen give no history of infection, and have negative blood tests.

(3) In one family in which both parents were congenital the child was apparently healthy, and with a negative blood test—probably because the mother had received treatment for her eye trouble in early youth.

My present procedure is:—

(1) To examine the mother carefully for any stigmata of congenital syphilis, such as rhagades, teeth, flattening of the nose, and hydrocephalus, or bossing of the forehead.

(2) To enquire into her past history for eye trouble, swelling of the knees or the bones.

(3) To enquire into her parents' history, and if the father has died, the cause of his death.

(4) To enquire into the history of her brothers and sisters, and any suggestive illnesses which they may have had.

If any suggestive information is thus obtained, I endeavour to get the mother's parents up for examination, also her brothers and sisters.

In the absence of anything suggestive in the history of the mother, if she shows a persistently positive Wassermann reaction, after three or more years' treatment, this suggests to my mind the possibility of congenital syphilis in her.

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The conclusion I wish to draw from my observations—though I realise that it is lacking in scientific proof—is that a congenitally syphilitic *mother* who has never received anti-syphilitic treatment (or perhaps very little treatment) may transmit a severe or florid congenital syphilis to her child, even though her husband be healthy. The explanation may be that she is a carrier of the *treponema* in her ovary or other pelvic organs. On the other hand, if she has received some treatment, or even spontaneously, she may transmit only a mild form of the disease to her offspring, or the child may be only undersized, or possibly the effect on the child may be *petit-mal*, mental backwardness, or some other form of so-called “para-syphilis.” I think this possibility must be borne in mind.

Then again we find that a congenitally syphilitic mother, equally well as a mother who has acquired syphilis from her husband, may bear healthy children. I have made two further observations in connection with the children of congenital mothers :—

(1) That in several cases it is the *second* child which is apparently most markedly affected, the elder child being either healthy or very slightly affected with the taint ; and

(2) That in several of the cases the affected child has shown an involvement of the central nervous system.

Further observations upon these two points are necessary before we can conclude that they are usual occurrences.*

A congenital father, from my researches, appears to be less likely than is a congenital mother to transmit the disease to his offspring.

* Since the above was written, I have come across an interesting case in Dr. Ogilvie's paper which has a bearing upon the first point. It is in connection with a family in which the transmission of syphilis to the third generation seemed probable, as was reported by Boeck.

Dr. Ogilvie remarks that the probability of transmission to the third generation is exceedingly great. A. Fournier calls it “*presque absolument démonstratif*,” and only takes exception to the circumstance that the mother has given birth to a healthy child before the syphilitic one. As a matter of fact, this so-called healthy child died aged one month, from convulsions, so that it might quite well have had congenital syphilis. Nevertheless, it is interesting, in view of my own findings, to see that so long ago as 1897 it had been observed that the second child of a congenitally syphilitic mother could be affected by congenital syphilis—while the first child was apparently healthy.

REFERENCES (quoted from Ogilvie's paper)

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Syphilis is probably unique among the diseases in the manner in which it is transmitted from parents to offspring. We must therefore be prepared for all kinds of unexpected happenings in connection with it. A mother with acquired syphilis may bear a syphilitic child after a healthy one—so may a congenitally-syphilitic mother. She may even bear twins, one of them being syphilitic and the other healthy. The subject of syphilis bristles with difficulties, or, I would prefer to say, is brim-full of interesting problems which still await solution. The question whether or no syphilis can be transmitted hereditarily to the third generation cannot be adequately answered by animal experiments. The only possible animals for observations parallel to the human experience would probably be the higher apes, and their use for this purpose would be ruled out on account of expense, the chances of their dying before they reach maturity, and the unlikelihood of their breeding in captivity. Even if a positive result were obtained in some cases, the numbers would still be inadequate for arriving at a conclusion. Third-generation transmission of syphilis is very difficult—though not absolutely impossible—to prove. Many authorities admit its possibility and even its probability. I would go further, and say that it does occur and that I have seen it occur in certain of my cases. I would ask those of you who have the opportunity, to enquire into this subject more fully than you have done in the past, in the light of what I have written. It will take time, and although you may appear to have done less work by seeing fewer patients, you will accomplish more. You will derive greater satisfaction and pleasure from your work, you will add to our knowledge of the subject, and last, but by no means least, you will contribute to the ultimate well-being of countless children. Amongst the many unsolved problems of syphilis is the question of the incidence of congenital syphilis. It is impossible to give exact or even approximate figures. Dr. Smith Wilson¹⁰ has estimated, upon two different bases of computation, that there are between 7,000 and 20,000 congenitally syphilitic children *always* present in our English schools. In addition to these, it is pitiable to think of the numbers of blind and mental children in the various institutions in the country, and indeed, probably all over the world,

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the origin of whose trouble is unrecognised or untreated congenital syphilis. This should not be! Congenital syphilis is the one disease which we can with certainty prevent, yet we do very little in this direction. I have had mothers tell me they had attended an ante-natal clinic before the birth of their child, who on subsequent examination has been found to be suffering from congenital syphilis, yet the mother had had no blood test taken during her pregnancy.

The foetal and neo-natal mortality due to syphilis, deplorable though it may appear to be, need not call for much sympathy, but the undoubted effects of congenital syphilis upon young children in producing blindness, mental and physical disabilities, most of which are of life-long duration and incurable, should arouse our sympathy for these children, and stimulate us to do everything possible to prevent the infection from reaching others. When we consider, furthermore, it is possible a congenitally syphilitic mother may transmit the disease to her offspring either in its typical form, or perhaps in the form of a toxic-dystrophy such as epilepsy, feeble-mindedness and so forth, the case for action becomes overwhelming. There should be co-ordination of, and co-operation between, the public health services, school clinics, the V.D. clinics, the ante-natal clinics, the mental hospitals, and the hospitals for nervous diseases. By registering or notifying all cases of general paralysis and tabes dorsalis and following up the families, many latent cases of congenital syphilis would assuredly be detected; by similarly notifying or registering all cases of congenital syphilis other cases in the family could be detected and treated, and means should be taken to keep in touch with the mother during the whole of her child-bearing period, to see that during a pregnancy she received adequate treatment. In these cases I find it very helpful, in smoothing out any domestic difficulty which may arise as the result of talking things over with the mother, to be able to assure her that the whole trouble may have been inherited by her from her parents, or possibly her grandparents.

Ladies and gentlemen, in conclusion I thank you all for having listened to me so patiently. I hope you will not think that I am becoming a syphilo-maniac, but I admit that I have given my own branch of the subject

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the closest attention for the past seventeen years, and in the interests of the children, I have given you to-night some of the results of my observations. My sincere thanks are due to all my colleagues, present and past, at the Hospital for Sick Children, Great Ormond Street, for granting me the facilities for the work by allowing me to see and treat their cases, to the members of the medical, laboratory, nursing and almoners' staffs of the hospital, directors of other clinics, medical superintendents of mental homes, officers and inspectors of the N.S.P.C.C. and all others who have helped me in my work.

ADDENDUM

5, II.

I have in previous publications (5.II) given the technique of the Wassermann method employed in my work, and also the terminology used in my reports. Here I will only say that the numbers 0, 1, 2, 3, 4 represent degrees of hæmolysis, from complete hæmolysis, "0," to total absence of hæmolysis, "4." A blood giving the result 4.4.4.4. would therefore have a very strongly positive Wassermann reaction.

CASES OF SYPHILIS IN THREE GENERATIONS

I. FAMILY 363.

Grandmother had 15 pregnancies (5 miscarriages). Of 10 living children, only 2 are now surviving, of whom patient's mother was the youngest but one in the family. W.R., 6.3.23 and 8.2.27 = 4.4.4.4. In April, 1932, aged 91 years, was hale and hearty. W.R. practically negative, Kahn positive.

Mother had I.K. from 8 to 17 years of age, attended Moorfields, and was treated with pills. In 1911 W.R. nearly negative, 1917 negative. Has typical Hutchinsonian teeth and corneal opacities.

Father said to have had syphilis and been treated, but has not been seen by me.

Of 16 pregnancies only two children surviving.

(1) A.S., female, born May, 1909. Rash at 3½ months; mercury by inunction and orally for four years between 1909 and 1913. In 1917 the W.R. was still strongly positive, and remained so until 1922, since when and down to the present time it has remained negative. In July, 1918, I.K. started at 9 years of age, and the patient was given the following treatment: 12 N.A.B. (4.05 grammes), 6 Neo-Kharsivan (2.4 grammes), 22 Sulfarsenol (7.32 grammes).

(2) D.S., female, born January, 1917; no symptoms. W.R. negative 1917—1932.

This case is an example of syphilis in three generations of a family, though it is impossible to say whether the mother's congenital syphilis was transmitted to her child or whether it was an instance of super-infection. The family also brings out the interesting point that an individual may have a strongly positive W.R. at 86, which without any treatment can become negative four years later, and yet be perfectly well and have no obvious signs or symptoms of syphilis.

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II. FAMILY 422.

Paternal Grandmother.—W.R., 6.12.21 = 4.4.4.4. Was married 8 years before the birth of first child (patient's father). He was said to have been a healthy baby, but had chest trouble. Fourteen years later a girl was born, who died of diphtheria at 2½ years.

Paternal Grandfather.—Said to have been healthy. Died at 60 of pneumonia. Was in the Mercantile Marine for a time.

Father.—Has a very big, broad head. Teeth bad, but not Hutchinsonian. No history of syphilis, or of the possibility of acquiring it before marriage. On 1.12.21 W.R. was very strongly positive (4.4.4.4.), and also on three occasions in 1922. Between these dates he was given twenty injections of Sulfarsenol (5.76 gm.) and mercury iodide pills. In July, 1923, C.s.f. was normal in all respects, and W.R. negative. 4.10.27, blood, W.R. nearly negative.

Mother.—Has never shown any signs or symptoms of syphilis. Her W.R. has been negative on many occasions between 1921—1931, even after a provocative injection of N.A.B.

Children.—(1) 1920, died in 2 months (wasting).

(2) 1921 (patient), female. Had marasmus, rash and convulsions at 5 weeks, and was diagnosed as congenital syphilis by the physician who saw her. W.R., 16.8.21 = 4.4, 22.11.21 = 0.0.0.0. Since then it has been tested eleven times between 1922 and 1930, and has given W.R. and Kahn negative. She is now a well-developed girl with normal teeth and eyes, but the head is somewhat big and the nose slightly flattened. She had treatment with mercury for 9½ months in infancy.

(3) 1924. Male. No infantile symptoms, but the head rather big and bossed. W.R. negative in May and October, 1924. Child died of broncho-pneumonia in January, 1925.

(4) 1925. Male. This was an eight-months child, and died in two days, ? congenital heart.

(5) 1927. Female. No infantile symptoms, and no symptoms in 1930. W.R. and Kahn negative October, 1927, and in 1928 and 1930.

(6) 1931. Male. No symptoms, W.R. and Kahn negative in July, 1931.

In my opinion this family also shows syphilis in three generations, the father in this instance suffering from the congenital disease, and it would appear as if he had transmitted the congenital syphilis in a mild form to one or two of his children, though the mother showed no signs of the disease. The criticism has been made that the child (2) may not have had congenital syphilis, because the W.R. was positive only on one occasion, and that this may have been an error. To this I should like to reply that the diagnosis was made on clinical grounds by the physician under whose care the child was, and that the clinical diagnosis, in my opinion, received confirmation from the blood test.

III. FAMILY 453.

Maternal grandmother had "paralysis" for 16 years. Twelve pregnancies, with 4 still births.

Mother.—Showed obvious signs of congenital syphilis, with rhagades about the mouth, and scars about the joints. She is nearly blind in the right eye, which is said to be the result of a fit. Her W.R. was strongly positive in 1921 and 1922, and less strongly so in 1927.

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Father gives no history of syphilis ; W.R., 1921, negative.

Married 1919.

Children.—(1) 1920, P.B. at $7\frac{1}{2}$ months.

(2) 1921 (patient), female. Peeling hands and feet at one month. W.R. strongly positive on two occasions in 1921, negative twice in 1922, strongly positive again end of 1922 and 1923, negative later in 1923, and thereafter in 1926 and 1927. C.s.f. negative. The child had mercury treatment on and off for several years, but did not thrive. In October, 1923, she had pyelo-nephritis, and in 1928 she was still very frail and thin.

(3) Male, 1923, born after the mother had some treatment (inadequate) with mercury. He had no symptoms suggestive of congenital syphilis, and on one occasion he had a weak positive W.R. in blood, but as he was only a month old, and the mother's blood was strongly positive, this W.R. might have been derived from the mother. He was given a certain amount of mercury treatment, and developed into a strong, healthy boy. The W.R. was negative from 1923 to 1927, when last seen.

(4) Born 1926, no signs or symptoms of congenital syphilis.

This case again shows syphilis in three generations of a family, the father showing no sign of syphilis, and giving no history.

IV. FAMILY 376.

Grandmother (maternal) died of locomotor ataxy.

Mother.—Has typical c.s. facies. W.R., 27.9.20 = 4.2.

Father.—No history of syphilis. W.R., 27.9.20 = negative.

Married 1910.

Children.—(1) 1911, female, no signs or symptoms at any age up to 12 years. W.R., strongly positive 1922 and 1923.

(2) 1918, male, M.D. and unable to sit up. W.R. very strongly positive. Showed improvement under treatment, and W.R. became negative in 1923, but he was still very mental when last seen in that year.

(3) 1919. Miscarriage at $1\frac{1}{2}$ months.

(4) 1920, female, no symptoms in infancy, or during the first year. W.R., negative.

(5) 1922, female, has not been seen or tested.

Here again we have a family with syphilis in three generations ; the mother has very typical syphilitic facies ; the first child, it will be seen, has no signs or symptoms of syphilis, but has positive W.R., whereas the second child, born after a very long interval, is very severely infected, being mentally defective and having a strongly positive W.R.

V. FAMILY 478.

Mother.—Had I.K. at 7 or 8 years of age, in-patient at Moorfields. Now well. Teeth—incisors pegged and notched. W.R. strongly positive in 1925 and 1926.

Father.—Well. No history of syphilis. W.R., 3.7.25 = negative.

Married 1921.

Children.—(1) 1922, male, no signs or symptoms of congenital syphilis. W.R. and Kahn negative in 1925.

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(2) 1924, female. Snuffled a little, and was never healthy as a baby. Hydrocephalus at 8 months. C.s.f. showed many pathological conditions: Albumen increased, sugar absent, cells 200 per c.m.m., Lange 4554321000, globulin much increased, W.R. positive. Blood W.R. negative. Died. P.M. showed marked basal meningitis and changes in the liver and spleen.

(3) 1926, male. No symptoms, W.R. and Kahn negative, June, 1926.

This case again shows a congenitally syphilitic mother with a congenitally syphilitic child, and the father giving no signs or symptoms of syphilis. It is interesting to note that the first child born to the parents had no signs of the disease, and that the Wassermann and Kahn reactions were negative at three years of age. It is, of course, possible that this child might have given a positive W.R. for a short time shortly after it was born, as did the child in Case II, Family 422. It is interesting to note further that the child which drew our attention to the family had a very severe infection of its central nervous system, from which it died, and also that it had positive W.R. in the cerebrospinal fluid, but negative in the blood.

VI. FAMILY 109.

Maternal Grandmother.—W.R., 5.1.26 = 4.4.4.4.

Father admits no possibility of infection. W.R. and Kahn negative in 1925.

Mother.—History of slight snuffles, no symptoms. W.R. very strongly positive 1925—1927, in spite of much treatment, and has persisted down to 1930.

Married 1920.

Children.—(1) 1922, still-birth at full time.

(2) Male. Rash, desquamation and epiphysitis at 1 month. W.R., 14.4.25 = 4.4.4.4. C.s.fl. 5.25 = negative. W.R., twice later in 1925, negative, and has remained so since then down to 1930, but Kahn has become positive.

(3) 1927, male (born after mother's previous treatment). No symptoms as a baby, or until 1930.

(4) 1931, female, died in 10 days, ? cause.

Again a family with syphilis in three generations, the father admitting no possibility of infection and with negative W.R. and Kahn. In spite of a considerable amount of treatment, the mother's blood gave a positive W.R. persistently, and it was this fact which led me to enquire into the possibility of her having congenital syphilis.

VII. FAMILY 430.

Maternal Grandmother.—18.1.24, W.R. negative.

Mother.—Congenital syphilitic; has no stigmata or symptoms, but W.R. very persistent. Was very strongly positive from 1924 to 1930, in spite of a large amount of treatment.

Father.—Had psoriasis since birth. Infection possible, but no history. W.R., 1924, negative.

Mother's Brother. Had eye trouble in 1920, when he was aged 18. His W.R. at another hospital was then said to be positive. When seen by me in 1924, W.R. was almost negative, Kahn positive.

Married 1920.

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Children.—(1) 1922, male. No symptoms, W.R. negative 1924—1931.

(2) 1923, male. Epiphysitis at 2 months. W.R. strongly positive and has remained so right down to 1932, in spite of much treatment. C.s.fl. negative.

This case is interesting for several reasons :—

In the first place the grandmother, who probably gave the disease to the two children here recorded, gave a negative W.R. when tested in 1924. The mother is almost certainly a congenital syphilitic, but has no symptoms or stigmata of the disease. Her W.R., however, was very persistently positive, in spite of treatment. Her brother has been treated for an eye affection, and still has a weakly positive W.R. with a positive Kahn. Of the children, the first gives no symptoms whatever and has a negative W.R. ; the second one has typical congenital syphilis, and has persistently positive W.R. (8 years).

VIII. FAMILY 433.

Mother.—An illegitimate child. W.R., 3.5.26 = 4.4.4.4. Had an ulcerated mouth 1920. Teeth very suspicious of congenital syphilis.

Father.—Aged 58.

Married 1922.

Children.—(1) 1926, male. Rash on buttocks at 8 weeks. Discharge from nose since birth. W.R., 3.5.26 = 4.4.4.4 ; 17.5.26, C.s.fl. = negative. Blood W.R., 8.8.26 to 17.7.28 (five examinations), all negative.

In this case the mother appears almost certainly to be a congenital syphilitic, judging from her teeth, and the disease was present in her child, its W.R. being strongly positive for a few months shortly after birth, since when it has been negative (1928).

The foregoing cases I. to VIII. were previously reported by me in the paper which I read before the Society in July, 1927.

IX. FAMILY 512.

Maternal Grandmother.—Married at 30 years of age, had one miscarriage, followed by four still-born children. Then the mother of patient, and after that a daughter who in 1928 had no symptoms of congenital syphilis, and W.R. and Kahn negative. When seen in June, 1928, grandmother's W.R. = 4.4.4.4, but she had no symptoms suggestive of syphilis.

Mother.—Married 1926. When seen in 1928 her teeth were not by any means typically Hutchinsonian, but showed some narrowing of the incisors, and were suggestive.

Father.—Gives no history of syphilis, or of any possibility of infection before marriage. In June, 1928, W.R. and Kahn quite negative.

Child.—Born 1928, marked signs of congenital syphilis at 6 weeks (snuffles, epiphysitis). W.R. very strongly positive (4.4.4.4), but became negative after treatment in three months. The child unfortunately died when six months old of diarrhoea and vomiting.

N.B.—Suspicion was aroused in this case by the slight Hutchinsonian characteristics of the mother's teeth. On going into the family history, syphilis was to be suspected from the history of still-births, and it was confirmed by the blood test on the grandmother.

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X. FAMILY 564.

Mother.—Born 1881, has very depressed bridge to nose, and looks congenitally syphilitic. W.R., 24.10.29 = 4.4.4.4.

Married 1913. (I have been unable to see the husband.)

Children.—(1) Still-born.

(2) Miscarriage, 1913.

(3) 1914, male, not examined.

(4) Male, died of convulsions at 9 weeks.

(5) Female, 1919, interstitial keratitis, deafness; W.R. and Kahn positive, 1929.

(6) Male, 1920, no infantile symptoms; in 1930 W.R. strongly positive (4.4.4.4). Patient was rather small, but showed no symptoms except the Hennebert syndrome.

N.B. This syndrome consists of attacks of giddiness or nystagmus, either spontaneous or induced by compression or aspiration of the air in the external auditory meatus. *Vide* N. Asherson, in *Archives Dis. Children*, Vol. V., October, 1930.

(7) Miscarriage.

(8) Female, 1922. No symptoms; W.R. and Kahn negative, 1931.

(9) Miscarriage, 1926.

(10) Male, 1929, no symptoms; W.R. and Kahn negative at 3 months.

The mother in this family is undoubtedly a congenital syphilitic, though I have been unable to get in touch with any of her collaterals, and unfortunately I have been unable to see the husband. It is interesting to note that although she has had no treatment, two healthy children have been born since the birth of two syphilitic ones.

XI. FAMILY 571.

Maternal Grandfather.—Said to have suffered from "gastric trouble."

Maternal Aunt.—Had "eye trouble," and was treated by intramuscular injections.

Maternal Uncle.—Had hydrocephalus and "leg trouble."

Mother of Patient.—Born 1904. Has no symptoms of syphilis, but upper central incisors are distinctly barrel-shaped, which suggested the possibility of congenital syphilis. W.R., 28.3.30 = 4.4.4.4.

Father of Patient.—No history of infection with gonorrhœa or syphilis. W.R. and Kahn negative, April, 1930.

Married 1925.

Children.—(1) Female, born 1926. Said to be well, 1930.

(2) Female, born 1927. Said to be well, 1930.

(3) Male, patient, born 1929. Rash and snuffles at 3 weeks, head enlarging at 3½ months: papilloedema present. W.R., 28.3.30, strongly positive. C.s.fl. negative. 7.6.30, child died after ligation of the internal carotid arteries.

In this case it was the mother's teeth which suggested the possibility of congenital syphilis in her, and confirmatory evidence of this is, I think, obtained from the history of eye trouble, treated by intramuscular injections, in her sister, and possibly from the fact that her brother had hydrocephalus and "leg trouble," though I have not been able to examine either of these individuals.

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XII. FAMILY 573.

Maternal Grandfather.—Born 1867; said to be alive and well in 1930.

Maternal Grandmother.—Died of pneumonia at 53. They had eight children, who are said to be alive and "well," but one daughter, the patient's mother, has syphilitic teeth, and her eldest sister had "eye trouble" in 1919, and again in 1931, which may have been syphilitic.

Mother.—Born 1907. No early history available. The left upper central incisor tooth is notched and suggestive, and the 6-year-old molars are all mulberry-like. W.R., May, 1930, strongly positive, and has remained so in spite of much treatment down to 18.1.32.

Married 1928.

Children.—(1) Female, born September, 1928, no symptoms, W.R. and Kahn negative, May, 1930.

(2) Male, patient, born 1930, snuffles, rash and hydrocele at 1½ months. No clinical epiphysitis, but X-ray positive. W.R. and Kahn strongly positive, May, 1930, and again in June, 1930. Since then W.R. has been negative (1930—32).

(3) Male, born 1932 (after mother's treatment). No symptoms except slight jaundice. W.R. and Kahn negative, July, 1932.

In this case again the mother's teeth suggested the possibility of congenital syphilis, and this would appear to be confirmed by the mother's persistent positive W.R. and the history of eye trouble in her sister.

N.B.—As in several of the other cases, it is the second child which shows the symptoms of congenital syphilis, though, of course, it is possible that the first child may have had a transient positive W.R. in infancy.

XIII. FAMILY 412.

Maternal Grandfather.—Was 34 years of age when his first child—patient's mother—was born. There were in all six children and three miscarriages, and all six children are said to have been healthy in infancy, and to be well now (1930). *He died of G.p.i. at 47 years of age*, after being twelve months in a mental hospital.

Mother.—No infantile history, and no obvious stigmata of congenital syphilis. W.R. and Kahn very strongly positive in October, 1926, and down to 1932, in spite of much treatment.

Father.—Has not yet been seen by me.

Married 1916.

Children.—(1) 1916, miscarriage at 3 months.

(2) 1926, patient, female, no rash or snuffles, slight hydrocephalus, coarse, vertical nystagmus, no disease of fundus. The blood W.R. was strongly positive on and off for 3½ years. The C.s.fl. has also been positive.

This case is interesting because it was under observation for several years before congenital syphilis was suspected in the mother. It was only on account of the persistent positive W.R. that I enquired into the family history, and then elicited the fact that the father had died of G.p.i., and was therefore undoubtedly syphilitic.

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XIV. FAMILY 620.

Maternal Grandfather.—Born 1866. Had 10 or 12 children ; patient's mother was the fourth in family, and was born in 1893, when her father was 27 years old. He died, aged 48, of G.p.i. (confirmed by the medical superintendent of a mental hospital).

Mother.—No symptoms as a child and has no stigmata of congenital syphilis. Married 1914. W.R., 14.10.31 = 4.4.4.4.

Father.—Born 1893. No history of any infection. W.R., 14.10.31 = 0.0. Kahn = negative.

Children.—(1) 1915. Male. Died at 10 weeks of "tumour at back of nose." (Inquest.)

(2) and (3) 1918. Twin girls. No symptoms in 1931. W.R. and Kahn, negative.

(4) 1922. Female. Healthy baby, no symptoms in 1931. W.R. and Kahn negative.

(5) 1924. Miscarriage at 6 weeks.

(6) 1928. Male. Weight only 4 lb. at birth. In 1931 is well, but small. W.R. and Kahn negative.

(7) 1931. Male. Snuffles since birth. No rash. Epiphysitis at 3/12. W.R. at 4/12 = 4.4. Died of broncho-pneumonia at 4/12.

I think there is no doubt that here again the mother is congenitally syphilitic, or at least that her father had syphilis, and he was only 27 years of age when the mother was born, so that it is quite probable that he may have given the disease to her. It is curious that of the mother's family only the seventh child shows definite symptoms of congenital syphilis, but of course it is possible that the first child, which died aged 10 weeks from some nasal trouble, may have been syphilitic, and there is the miscarriage and the birth of a very small child afterwards, which may also have a syphilitic basis.

XV. FAMILY 648.

Maternal Grandfather.—Born 1855. Died in 1914 in a mental home after being ill for three years with G.p.i. He and his wife had 12 or 13 children, of whom only 4 survive.

(1) 1894, male, said to be well.

(2) 1896, male, I.K. started quite recently. Is married and said to have two healthy children.

* (3) 1897, mother of patient. No history available. In 1932 has a bossed forehead. Right lower canine tooth is notched ; nearly all the others are artificial.

(4) 1903. Female. Married and has three children, all said to be well. Blood W.R. said to be negative.

* (3) *Mother.* Married 1920. W.R., September, 1932 = 4.4.4.4.

Father.—Not seen by me.

Children.—(1) 1921, Male. Small baby—weight at birth only 4 lb. No rash or snuffles. Had a double hernia, and was under supervision for 6 to 9 months. Seen in 1932, is small, but has no signs of congenital syphilis. W.R. and Kahn, negative.

(2) 1927. Male. Healthy baby but head big. At three years a yellow tint developed ; also history of "dark urine" (*nil* in the urine). Blood count, fragility, liver function, v.d. Bergh and C.s.fl. all said to be normal. September, 1932, W.R. 4.4.4.4.



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This case is interesting because it brings out rather clearly the point which I have stressed in my paper, that by paying more attention to the parents of our young patients, we could often get valuable help in diagnosis. This boy had attended hospital on many occasions for his treatment, but the suggestive appearance of the mother had apparently not been noticed. Owing to the mother's brother having recently developed I.K., which, be it noted, occurred at the age of 36 years, or more, her family history had been gone into, and the mother herself had already been acquainted with the result, but had not mentioned the fact to the hospital physician under whose care the little boy had been.

One might remark, also, that it is the second child again who shows signs of congenital syphilis, and though it is possible that the elder boy, who weighed only 4 lb. at birth, might also have had mild symptoms of congenital syphilis, his W.R. and Kahn are at the present time negative.

XVI. FAMILY 369.

Mother (see Family 503, Case VII of *possible* syphilis in three generations, p. 27). Born 1880, no early history available, but in 1921 was very deaf and W.R. weakly positive. An elder brother and younger sister are congenitally syphilitic.

Father.—Born 1879. Was in the navy, but gives no history of infection. W.R. negative in 1921 and 1932.

Children.—(1) 1906, male. No symptoms. W.R. negative 1921. In 1932 is a pilot in the Air Force.

(2) 1910, male, no rash or snuffles. Hemiplegia after a fit at 6 weeks. In 1919 W.R. 4.4.4.4. Has choroiditis and nystagmus. Microcephaly, and is backward mentally. 1924, C.s.fl. negative. Teeth typically Hutchinsonian. W.R. negative since 1926. In 1932 has turns of "minor epilepsy"; is working in a greengrocery shop; seems sensible and rational, but greatly handicapped owing to lack of education, defective vision and right hemiplegia.

In this family again, it is the second child who has marked congenital syphilis, and, moreover, has an affection of the central nervous system.

N.B.—The next six cases are *probable* syphilis in three generations.

XVII. FAMILY 142.

Grandmother (Maternal).—Had several premature children, but no miscarriages.

Mother.—Had Raynaud's disease at 15 years, and I.K. in 1899, at 20 years of age. W.R., February, 1923, 4.4.4.4. Had treatment at another hospital. In 1928 she became very ill, with affections of the heart, lungs and kidneys. The W.R. was still positive when she died (1928).

Father.—Gives no history of infection. W.R., 1923, negative.

Married 1905.

Children.—(1) 1909, female, died at 10 weeks of bronchitis and wasting.

(2) 1911, male, died at 4 weeks of wasting.

(3) Miscarriage at 4 months, 1913.

(4) 1915, patient. At 6 weeks she attended hospital for constipation,

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and again at 9 months for nasal obstruction. At 5 years of age a mitral systolic murmur was detected, and two years later this was still present. The child was pale and languid, but no definite signs of rheumatism could be detected. W.R. was negative 1923—1925, and several of the tests were taken after a course of N.A.B.

In this case the mother suffered from I.K. and obviously had congenital syphilis (second generation). It is probable, though now incapable of being proved, that the third generation, namely the mother's family, may have been infected with syphilis, the first two children dying in early infancy, and even the child who survived may possibly have been syphilitic in early childhood. This case has already been reported in my paper previously referred to.

XVIII. FAMILY 28.

Mother.—Had typical facies of congenital syphilis. W.R. strongly positive January, 1919, but after treatment had become negative in 1927.

Father.—Gives no history of syphilis. W.R. and Kahn negative, July, 1927.

Married 1910.

Children.—(1) 1910. Male. No infantile symptoms; cervical glands enlarged, 1914; chest trouble 1918, W.R. strongly positive. Patient had mercury treatment 1914 and 1919—1920. W.R. then negative, and remained so afterwards until 1927.

(2) 1912. Male. No symptoms of congenital syphilis. W.R. negative at 6 years. Died at 13 years of blood poisoning.

(3) 1914. Female. Had symptoms of congenital syphilis. Died at 3 months.

(4) to (7). Stillbirth (6 months) and full term (3).

(8) 1922. Male. No symptoms of congenital syphilis. W.R. negative 1923—1927.

(9) 1923. Male. No symptoms of congenital syphilis. W.R. negative 1924—1927.

In this case the mother had the typical aspect of congenital syphilis herself, but as this was one of the very early cases, and further investigation into the family history was not made at the time and has since been impossible, I would prefer to put the case in the category of *probable* syphilis in three generations.

XIX. FAMILY 480.

Mother.—Has suspicious teeth, and is probably herself congenitally syphilitic.

Married twice, 1910 and 1914. Husband not seen.

Children.—(1) to (6). All stillbirths at 6 to 6½ months.

(7) Stillbirth at 8½ months.

(8) 1916. Female. No symptoms until 3½ months. Then had marasmus, and attended hospital for 6 to 8 weeks. At 9 years of age she returned to hospital with nephritis. W.R. then strongly positive.

Since 1926 I have been unable to get in touch with this family. It is again a case of *probable* syphilis in three generations, and as it is one of the early ones, I have been unable to establish contact with them again. I am therefore unable to confirm and amplify these notes.

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XX. FAMILY I.

Mother.—Had very notched teeth, which looked undoubtedly Hutchinsonian. W.R. very strongly positive in 1918, and again in 1922.

Married 1915.

Children.—(1) 1916. P.b. 6½ months.

(2) 1918. Male. This child had typical congenital syphilis in infancy, and had mercury treatment at that time. He came under observation again at the end of 1922, and the W.R. was strongly positive. He was given a few injections of N.A.B., and unfortunately developed a fatal dermatitis after the fourth injection.

This again was one of my earliest cases, and the mother was diagnosed upon the condition of her teeth. I have been unable to confirm the diagnosis, owing to my inability to get in touch with the family again.

XXI. FAMILY 557.

Maternal Grandfather.—Born 1877. Was in the Royal Marines, and in 1932 was said to be well.

Maternal Grandmother.—Died at 49 of heart disease.

Their Children.—(1) 1904. Patient's mother. Said to be always ailing as a child, and with a history of bad eyes at 8 to 12 years.

(2) Died of convulsions at 3 months.

Mother.—Married 1926. Seen by me in August, 1929, when her teeth were suggestive, the upper and lower central incisors being small and narrowed. The left pupil was smaller than the right, and sluggish. In 1932 she had ulceration of the throat, with perforation of the soft palate, and later, ulceration of the nasal bones. At the same time the left knee became swollen. W.R. very strongly positive in 1929, 1931 and 1932.

Father.—Not seen by me.

Children.—(1) 1927. Female. Had discharging nose at birth, and ears discharged soon afterwards. In 1929 very depressed bridge to nose. W.R. negative 1929—1931.

(2) Miscarriage at 3 months.

(3) 1930. Male. No symptoms at 4 months. W.R. negative, 1930—31.

The mother of this family is undoubtedly a congenital syphilitic, with her suggestive teeth, history of bad eyes at 8 to 12 years of age, and ulceration of throat with perforation of soft palate. It is impossible to say whether any of her children have suffered from congenital syphilis, but it is quite probable that the first child's discharging nose at birth, and discharging ears shortly after birth, may have been a manifestation of congenital syphilis, and that if the child's blood had been tested then it might have given proof of this.

XXII. FAMILY 397.

Maternal Grandfather.—Is still alive (1932), but as he lives in a small village in the heart of the country I have been unable to see him.

Maternal Grandmother.—Alive in 1932. She was married in 1886, and had nine children between 1886 and 1899, the youngest of these being the patient's mother. In 1927 the grandmother had a gumma of the head, and on examination her blood was found to be very strongly positive.

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Owing to the fact that the patient's mother was not married, I have been unable to get in touch with her, but it may be presumed that she, too, is syphilitic, as her child, the patient, when seen at the age of sixteen months, had a very strongly positive W.R. and hydrocephalus and enlarged liver and spleen. His blood was positive for three years, during which time he was having mercury treatment, but it became negative in 1926, and has remained so until 1932, after nineteen injections of sulfarsenol.

The mother has two or three other children, but it has been impossible to get in touch with them.

This family is probably syphilitic in three generations, but owing to my having been unable to see the mother, it is not possible to be certain of this.

The next seven cases I regard as families in which syphilis was *possible* in three generations. The first and the fourth of them have already been reported in my previous paper.

XXIII. FAMILY 230.

Maternal Grandmother.—Said to be positive.

Mother.—Had treatment for I.K. before marriage, but no treatment while carrying first child. Two courses of injections and pills while carrying second child. W.R., 22.2.21 = 4.4.3.1. 31.7.23 = 4.3.3.0.

Mother's Sister.—No signs or symptoms of congenital syphilis. W.R., 1923 = negative.

Father.—Not seen.

Children.—(1) November, 1920, female, patient. Marasmus at 11 weeks. W.R., 22.2.21 and 31.7.23 = negative.

(2) December, 1922, female. W.R., 31.7.23 = 0.0.

In this case the mother is a congenital syphilitic, if we accept the I.K. and positive W.R. as evidence. Although the two children when examined by me had no symptoms of congenital syphilis, and had a negative W.R., it is possible that the elder child may have had a slight infection, because there is a history of marasmus at 11 weeks, when possibly, if the blood had been examined, it might have been found positive.

XXIV. FAMILY 286.

Maternal Grandfather.—One can only say that there is an indefinite history of syphilis to be obtained.

Mother.—Has no symptoms of congenital syphilis, but had a very strongly positive W.R. from May, 1923, when first seen by me, until June, 1926, in spite of a very large amount of treatment with arsenic and bismuth.

Father gives no history of any previous infection, or of the possibility of any acquired syphilis.

Married 1910.

Children.—(1) 1911, female. No symptoms of congenital syphilis. W.R. quite negative up to the age of 12 years.

(2) 1922, female. Snuffles at 2 months, no rash. Hydrocephalus at 6 months, first dentition, hypoplastic. W.R. at 5 months strongly positive, but gradually became less strong during the succeeding year, and has been negative from 1914 to 1927, when last seen.

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This case can only be regarded as one of *possible* syphilis in three generations because of the mother's very strongly positive W.R. even after prolonged treatment. One cannot be certain of it in the absence of any signs or symptoms in the mother, or the direct examination of the grandparents. It is interesting to note again that if it is a case of third-generation syphilis, the first child apparently shows no signs, and the second child shows slight manifestations, which cleared up rapidly under treatment.

XXV. FAMILY 221.

Mother.—Almost certainly a congenital syphilitic, with typical Hutchinsonian and Moon's teeth. No family history obtained. W.R., 17.11.25 = very strongly positive.

Married 1916.

Father.—Not seen by me.

Children.—(1) and (2) Twins.

(1) Died at birth.

(2) Said to have had no rash, snuffles or infantile symptoms. She came up for fits in 1925, when she was nearly 10 years of age. W.R. then negative in blood and c.s.f.

(3) }

(4) } All girls—born 1920, 1922, 1924. No details available of these.

(5) }

If we regard the mother as being undoubtedly a congenital syphilitic, making the diagnosis on the teeth, then there is the possibility that the fits of the eldest child may be a manifestation of syphilis in the third generation, though the absence of a positive W.R. may be regarded as evidence against this. It is, however, possible that a blood examination at an earlier date might have elicited a positive result.

XXVI. FAMILY 416.

Grandmother.—Married three times—first at 17 years, infected probably by first husband. W.R., 16.6.27 = 0.0. K. = N.N.

Children.—(1) P.B. at 6½ months.

(2) P.B. at 7 months.

(3) 1902, male, married.

* (4) 1904. *Mother of patient*. Said to have been born with meningitis. I.K. at 12 years, W.R. then positive. Had treatment. Ulceration of palate with destruction of uvula at 14 years. 1927, 1929 and 1930, W.R. negative, K. positive. Now blind in right eye. Right pupil widely dilated. Left pupil ? fixed or inactive. Teeth hypoplastic, but not typical Hutchinsonian.

(5) 1906, male.

(6) 1908, female. In 1927 W.R. = Neg. K.N.N. Married August, 1928, died November, 1928 (? phthisis).

(7) 1910, male. Died 1927 of laryngitis.

(8) 1912, male. }

(9) 1914, „ } All said to be well.

(10) 1916, „ }

(11) By second husband. 1919, female. Is well, 1927, W.R. and K. negative.

THIRD-GENERATION SYPHILIS

* (4) *Mother*.—Married 1925.

Father.—No history of infection, W.R. and K. negative (June, 1927).

Child.—(1) 1926, female. Eye discharge at 9/12, but no signs of congenital syphilis. W.R. and K. negative, 1927, 1929 and 1930.

Here again we have a mother with congenital syphilis, and a child apparently healthy, but it is just possible that if the latter had been examined in early infancy the blood test might have been positive, or that something might have been seen in the bones by X-ray, or, alternatively, a mild manifestation of the disease recognised.

XXVII. FAMILY 563.

Maternal Grandmother.—Lost several children before patient's mother.

Mother.—Born 1898. Attended Moorfields on account of bad eyes. Teeth typical Hutchinsonian. 17.9.29, W.R. and Kahn negative.

Married 1921.

Children.—(1) 1923, male, alive and said to be well, not seen by me.

(2) 1925, male, no symptoms. 17.9.29, W.R. and Kahn negative.

(3) 1929, female, no symptoms. 17.9.29, W.R. and Kahn negative.

The families live in High Wycombe, and the fathers were not seen.

In this family the mother is undoubtedly a congenital syphilitic, with her teeth and eye affection. Presumably her mother was also syphilitic. Of the children, it is possible that one or more of them might have shown slight signs in infancy, and if their blood had been examined earlier they might have given a positive reaction.

XXVIII. FAMILY 600A.

Maternal Grandfather.—Born 1866, said to be well in 1931.

Maternal Grandmother.—Born 1875. In 1931 has tabes dorsalis; had a positive W.R. in 1927, and has since been treated for tabes at another hospital.

Children.—* (1) 1901, female, *mother of patient*. Had I.K. at 17 years. W.R. positive. Treated for 3 years at an eye hospital. In 1931, W.R. and Kahn negative. Incisor teeth suggested further investigation.

(2) 1905. Said to be blind in one eye all her life; at 22 years had bad eyes and treatment by injections. Married 1926. Has one boy, said to be well.

(3) 1909. Has V.D.H. and bad eyes (1931).

* (1) *Mother*.—Married 1923. Father born 1899. Served during the Great War. No history of syphilis. W.R., negative, June, 1931.

Children.—(1) 1926, male. No signs of congenital syphilis in infancy, but cried a good deal. In 1931 is small and "nervy." W.R. and K. quite negative.

(2) Miscarriage at 6 weeks.

Here, again, we have undoubtedly syphilis in two generations, and possibly the child born in 1926 may have had a mild infection, and his blood, if then examined, might have been positive.

XXIX. FAMILY 503 (see also page 22, Family 369).

No available history of the grandparents, but patient's * mother (born 1883) is (in 1928) obviously a congenital syphilitic, with marked

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rhagades about the mouth and chin ; is rather deaf. Teeth artificial. 23.1.28, W.R. negative, Kahn weakly positive. The history is that at about 18 years she attended a hospital for her eyes, for two years, and at the same time had swelling of the knees.

A brother (born 1878) had a "tumour at the back of the eye" at 2½ years, and he had a daughter who, at 10 years of age, was in the same hospital as the aunt attended, also for eye trouble (probably I.K.) as the doctor said she had the same disease as the aunt.

A sister (born 1880) comes into another case record, Family 369, Case 16, page 22.

* *Mother* (born 1883).—Married 1908. Husband was in the Navy before the War, but gives no history of infection. His W.R., 18.7.28, negative.

Children.—(1) Still-born, 1910.

(2) 1911, male. Healthy baby. Purpuric patches (? a bleeder) at 7 years. In 1928 teeth and eyes good. Looks healthy. W.R. negative.

(3) 1914. Still-born.

(4) 1923, female, patient. Healthy baby. 1928, has fits—? petit mal. W.R. and Kahn, negative, 1928—1930, c.s.f. negative.

(5) 1926, male. Small at birth. 1928—1931, appears well. W.R., negative.

In this family the mother and her sister have undoubted congenital syphilis, from which it may be inferred that the grandparents suffered from syphilis. The mother's obstetric history is rather suggestive of syphilis, and the fourth child, the one for whom advice was sought at the hospital, may have had a positive blood in infancy. I would regard this case as one of possible syphilis in three generations.

In the next two families both parents are congenitally syphilitic.

XXX. FAMILY 542.

Paternal Grandfather.—Died aged 34, of pneumonia.

Paternal Grandmother.—Now remarried (1929).

Father. Born 1899. No history available of infancy and childhood. At age of 13 he was under treatment for his eyes, but apparently his sight has never been normal, though he was able to work until 21 years of age. In March, 1929, Dr. Walshe, of University College Hospital, reported "his right pupil dilated and inactive to light ; choroidoretinitis and patches of exudate in lens present ; K.J. and A.J. not obtained ; others present." Dr. A. M. H. Gray noticed at the same time that the bridge of the nose was depressed and the central incisors were typical Hutchinsonian. His W.R. was positive, and he received three injections N.A.B. I examined him a few weeks later—when he was obviously a congenital syphilitic and the W.R. was 4.4.4.3 (8.4.29).

Mother's parents are both dead.

Mother.—Born 1900. Snuffed in infancy. Said to have been almost blind from birth, and attended Moorfields Eye Hospital every week.

In September, 1928, at U.C.H. Obstetric Hospital, W.R. negative. Seen by Dr. Gray for the first time November, 1928, when 8 months pregnant. Had opacities of both corneæ, left pupil irregular, bridge of nose depressed, central incisors Hutchinsonian. Clinically the case was obviously one of congenital syphilis, but the W.R. taken on 30.11.28 = negative, as it was also a week later after a provocative injection of 0.45 gr. N.A.B.

THIRD-GENERATION SYPHILIS

Seen by me on 8.4.29, W.R. negative, Kahn weakly positive.

Children.—(1) Male, born 30.12.28. Cord blood W.R., negative. Child said to have snuffled at birth, no rash. 8.4.29. No symptoms. W.R. and Kahn negative. 17.12.29. Patient recovering from German measles; has diarrhoea.

(2) On 17.12.29 mother was four months pregnant, but subsequent history unknown, as, in April, 1930, it was ascertained that the parents had gone to Northampton.

This case is interesting inasmuch as both parents were undoubtedly congenitally syphilitic, and presumably both had been treated for their syphilis, on account of the eye trouble. Possibly this explains why the child which was born to them gave a negative blood reaction, and if it was infected at all (because it is said to have snuffled at birth) the infection must have been a very mild one.

XXXI. FAMILY 71 (both parents congenital syphilitics: father treated; mother untreated).

Paternal Grandfather.—Born 1880. Was a steward in the mercantile marine. In 1932 said to be well.

Paternal Grandmother.—Born 1881, married 1903. W.R., May, 1915 = 4.4. No symptoms 1915—1932.

Children.—(1) and (2) Still-born.

(3) 1906, male. *Patient's father.* Snuffles in infancy. Periostitis of tibia at 9 years. W.R., April, 1915 = 4.4. Negative in 1918, 1919 and 1927. In 1932 he appears to be quite well.

(4) 1909, female. No symptoms in infancy or till puberty. In 1929 has a "rheumatic heart." W.R. and Kahn, ? weak positive.

(5) 1911, male. No infantile symptoms. 1915, W.R. = weak positive. 1929, not strong, ? rheumatic.

(6) 1913, still-born.

(7) 1915, male. No infantile symptoms. Developed rheumatism at 4 years, and died of valvular disease of the heart.

(8) 1919, male. No infantile symptoms. 1929 ? rheumatic. Has swellings in groin. W.R. and Kahn, negative 1929.

Patient's Mother.—Born 1907. Her father died at 39 of consumption, and her mother at 41 of ? cancer, patient's mother being their only child. At 21 she was a patient in a London hospital for kidney trouble (tubercle), and the right kidney was removed. It was there recognised that she had typical Hutchinsonian teeth, and her W.R. was tested and found to be positive. No anti-syphilitic treatment was given.

Married June, 1930. W.R., 16.2.32 = 4.4.4.4.

Baby born 7.12.31. Healthy except for a left ingl. hernia, for which he was brought to the Children's Hospital. Seen by me 16.2.32. No symptoms of cong. syph.

On 14.6.32, W.R. = 4.4.4.4. Seen again on 22.7.32. Child is well, has no symptoms. X-ray shows evidence of old periostitis, especially of tibiæ. 24.10.32, W.R. still = 4.4.4.4. C.s.fl. = 4.0.

This case is perhaps one of the most interesting, if not the most interesting, in my series, because I had treated the father for congenital syphilis, and he was apparently quite well at the time he married. His wife had never had any treatment, and it would appear that her untreated congenital syphilis was transmitted to her child. This

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raises the important question whether, if a woman is discovered to have congenital syphilis, she should not be advised that treatment is necessary for her, even though she may have come under observation for something totally different, as did this patient.

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